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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,329	05/18/2005	Brent L. Carpenter	432081	5708
30955 7590 01/02/2008 LATHROP & GAGE LC 4845 PEARL EAST CIRCLE SUITE 300 BOULDER, CO 80301			EXAMINER BHAT, ADITYA S	
			ART UNIT 2863	PAPER NUMBER
			MAIL DATE 01/02/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/535,329	<b>Applicant(s)</b> CARPENTER, BRENT L.	
	<b>Examiner</b> Aditya S. Bhat	<b>Art Unit</b> 2863	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-7 and 9-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4,5,15,16 and 24-27 is/are allowed.
- 6) ☒ Claim(s) 1,2,6,7,9-14 and 17-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/30/07, 10/31/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status***

1. Claims 1-2,4-7 and 9-27 are pending in this application. Claims 1-2, 6-7, 9-14, and 17-23 are rejected under 35 U.S.C. 103(a). Claims 4-5,15-16 & 24-27 have been allowed.

### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/30/2007 has been entered.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 10/30/2007 &10/31/2007 have been received. The submission is in compliance with the provisions of 37 CFR 1.97 and 37 CFR 1.98. Accordingly, the information disclosure statement has being considered by the examiner.

### ***Drawings***

4. The drawings submitted on 5/8/2005 are in compliance with 37 CFR § 1.81 and 37 CFR § 1.83 and have been accepted by the examiner.

### ***Claim Rejections - 35 USC § 103***

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 6-7, 9-14, and 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bose et al. (USPN 5,734,112) in view of Van Cleve et al. (USPN 5,731,527).

With regards to claim 1, Bose et al. (USPN 5,734,112) teaches a sensor (Col. 5, line 45) characterized in that the sensor comprises:

a conduit (col. 2 lines 63-64) configured for conveying a material, (Col. 1, line 31) the conduit presenting an axial length (col. 5, lines 31-32)

a vibrator configured for vibrating the conduit along a first cross-sectional axis and for vibrating the conduit along a second cross-sectional axis; (col. 2 lines 64-67) (Col. 3, lines 60-63)

It would be within reasonable interpretation for one of ordinary skill in the art to conclude that the conduit has cross section. Since the cross section is not a physical component and is merely an imaginary axis to show which direction (x,y,z) the vibrations are occurring. It should also be noted that the vibrating is done in a bending and a twisting mode either of which are done on separate axis's. (Col. 5, lines 27-28 & 42-44)

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a sensor configured for detecting a first frequency along the first cross-sectional axis (a) and for detecting a second frequency along the second cross-sectional axis (b); (Col. 3, lines 1-10) and

a processor (1200) configured for determining a pressure of the material based on a ratio of the first frequency and the second frequency. (col. 3, lines 10-14)(1200; Col. 8, line 27)

With regards to claims 2, and 13, Bose et al. (USPN 5,734,112) teaches the conduit comprises a cross-section selected from one of an elliptical shape and an oval shape. (12,14 figure 1) One of ordinary skill in the art may look at figure 1 and conclude that the cross section of conduits(12 &14) shown in figure 1 as can be determined from the figure would be some variation of an ellipse. It should be noted that circle is a special case of an ellipse.

With regards to claims 6 and 17, Bose et al. (USPN 5,734,112) teaches the pressure linearly corresponds to the ratio of the first and the second frequencies. (Col. 3, lines 10-13)

With regards to claims 7 and 18, Bose et al. (USPN 5,734,112) teaches the conduit is elastically deformable to change a length of the second cross-sectional axis based on the pressure of the material. (col. 2 lines 34-36)(Col. 7, lines 1-5)

With regards to claims 19, Bose et al. (USPN 5,734,112) teaches converting the first and second resonant frequency into digital representations of the first and second resonant frequencies frequency. (col. 8, lines 49-54)

With regards to claim 20, Bose et al. (USPN 5,734,112) teaches processing the digital representations of the first resonant frequency and the second resonant frequency to determine the pressure of the material based on the squared ratio of the first resonant frequency and the second resonant frequency. (Col. 3, lines 40-45)

With regards to claims 9 and 21, Bose et al. (USPN 5,734,112) teaches the processor further comprises a calculation module configured for determining a density of the material *from one of*:

a calculation of the pressure, a pressure compensation factor, and one of the first frequency and the second frequency, (col. 3, lines 17-23) and

a calculation of an average of the first frequency and the second frequency. (Col. 28, lines 17-18)

With regards to claims 10 and 22, Bose et al. (USPN 5,734,112) teaches a temperature sensor configured for detecting a temperature of the material conveyed through the conduit and for generating a temperature control signal for processing by the processor; (Col. 5-6, lines 60-67 & 1-2) and

a timing controller (Col. 6, line 1) configured for synchronizing the processing of the temperature control signal with the determining of the density. (Col. 6, lines 1-5)

With regards to claims 11 and 23, Bose et al. (USPN 5,734,112) teaches a frequency sensor configured for detecting a phase difference in at least one of the first and the second frequencies, wherein the processor is further adapted to determine a mass flow rate of the material based on the phase difference. (Col. 1, lines 40-43)

With regards to claim 12, Bose et al. (USPN 5,734,112) teaches a method of measuring a property of a material (F) conveyed through a conduit, the conduit presenting an axial length, characterized in that the method comprises:

vibrating the conduit along a first cross-sectional axis (a); (col. 2 lines 64-67)(Col. 5, lines 25-28)

vibrating the conduit along a second cross-sectional axis (b); (Col. 3, lines 61-63)(Col. 5, lines 40-44)

detecting a first resonant frequency along the first cross-sectional axis in response to vibrating the conduit at the first cross-sectional axis; (Col. 7, lines 24-27)

detecting a second resonant frequency at the second cross-sectional axis in response to vibrating the conduit along the second cross-sectional axis; (Col. 7, lines 24-27) and

determining a pressure of the material based on a ratio of the first resonant frequency and the second resonant frequency. (Col. 3, lines 10-14)

Bose et al. (USPN 5,734,112) does not appear to teach the conduit presenting a noncircular (Oval shaped) cross-section of major axis (a) and minor axis (b) of respective dimensions (a) and (b) wherein the cross-section tends to become slightly more circular as pressure internal to the conduit is increased.

Van Cleve (USPN 5,731,527) teaches the conduit presenting a noncircular cross-section (oval shaped)(1703&1803) of major axis (a) and minor axis (b) of respective dimensions (a) and (b) wherein the cross-section tends to become slightly more circular as pressure internal to the conduit is increased. (Col.8, Lines 35-40)

It would've been obvious to one skilled in the art at the time of the invention to modify the Bose reference to include the expandable conduit taught by Van Cleve in order to achieve a high flowmeter sensitivity and capability of accommodating higher material pressures. (Col. 4, lines 1-3)

***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4-5, 15-16 and 24-27:

Please refer to office action mailed on 6/29/2007

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Castel (USPN 5,770,805) teaches a method and device for measuring a parameter of a fluid having variable density.

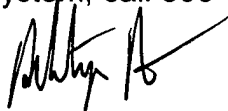
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aditya S. Bhat whose telephone number is 571-272-2270. The examiner can normally be reached on M-F 9-5:30.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Aditya Bhat  
December 22, 2007